

APPLICANT(S): SCHMIDT, Christian  
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### **REMARKS**

The present response is intended to be fully responsive to all points of objection and/or rejection raised by the Examiner and is believed to place the application in condition for allowance. Applicant asserts that the present invention is new, non-obvious and useful. Prompt consideration and allowance of the claims is respectfully requested.

### **Status of Claims**

Claims 1-15, 17-19, 21-25, 27-51, 75 and 77 are pending and have been rejected.

Claims 1, 8, 32, 37 and 39 have been amended herein. Applicant respectfully asserts that the amendments to claims 1, 8, 32, 37 and 39 add no new matter.

Claims 33-36 have been canceled herein without prejudice or disclaimer. In making this cancellation without prejudice, Applicant reserves all rights in these claims to file divisional and/or continuation patent applications.

### **CLAIM REJECTIONS**

#### **35 U.S.C. § 112 Rejections**

In the Office Action, the Examiner rejected claims 1-15, 17-19, 21-25, 27-44, 46-50 and 75-76 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

According to the Examiner, the phrase "applying heat in a directed and locally restricted manner" (in independent claim 1) is indefinite because it fails to set forth a set area.

In response, Applicant has herein amended independent claim 1 to now include the type of heat source. As such, Applicant respectfully asserts that it is now clear and well defined in the claims how heat is applied in a directed and locally restricted manner.

Accordingly, Applicant respectfully requests that the Examiner withdraw this rejection.

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### 35 U.S.C. § 103 Rejections

In the final Office Action, the Examiner rejected claims 1-2, 5-15, 17-19, 32-35, 41-44, 46-50, 75-76 under 35 U.S.C. § 103(a), as being unpatentable over Cross (U.S. Patent No. 4,777,338) in view of Takagi et al. (U.S. 6,348,675). Applicant respectfully traverses this rejection in view of the remarks that follow.

According to the Examiner, Cross teaches a method of forming a structure, preferably a hole or cavity or channel, in a region of an electrically insulating substrate, comprising the steps of (a) providing an electrically insulating substrate, (b) applying, by means of a voltage supply, a voltage across a region of said electrically insulating substrate, said voltage being sufficient to give rise to a significant increase in electrical current through said region and to a dielectric breakdown (DEB) through said region, (c) applying energy, preferably heat, to said substrate or said region only so as to increase the temperature of said region, said energy, preferably heat, originating either from an energy or heat source or from components of said voltage applied in step (b), said energy, preferably heat, being applied so as to reduce the amplitude of voltage required in step (b) to give rise to said current increase and/or to soften the material of said region.

The Examiner acknowledges that Cross fails to teach wherein step (b) is performed and, preferably, ended using an electronic feedback mechanism operating according to user-predefined parameters, said electronic feedback mechanism controlling the properties of said applied voltage and/or of said electrical current wherein said electronic feedback mechanism comprises a current and/or voltage analysis circuit, alone or as part of a user-programmed device, said current and/or voltage analysis circuit controlling voltage supply output parameters, and/or controlling said energy, or heat if present, but argues that Takagi teaches an electronic voltage feedback mechanism which measures voltage and sends a signal to the pulse generator which would be controlling the energy or heat.

Applicant has herein amended independent claim 1 to now recite, *inter alia*, that the application of heat in a directed and locally restricted manner occurs "by using a laser or other focused light source or a gas flame or by applying an AC voltage to said region".

Applicant respectfully submits that Cross does not teach or suggest applying heat in a directed and locally restricted manner by using a laser or other focused light source or a gas

flame, or by applying an AC voltage to said region as recited in amended independent claim 1. Applicant notes that the only way by which Cross aims at modifying/regulating the temperature of Cross's substrate is by using a water bath. However, Applicant notes that the purpose of Cross's water bath is to remove heat rather than apply heat to defined regions in the substrate.

Also, the Examiner appears to take the position that, in Cross, heat is applied by the electrodes. However, Applicant points out that Cross does not contemplate applying heat by using a laser or other focused light source or gas flame or by applying an AC voltage to said region, as is now required by amended independent claim 1.

Also, Applicant notes that Takagi also does not contemplate applying heat in a directed and locally restricted manner by using a laser or other focused light source or a gas flame, or by applying an AC voltage to the region. Applicant notes that Takagi relies on voltage measurements to define a pore-opening discharge spark, and to subsequently monitor and count penetrating-discharge sparks which serve to increase the diameter of the pore. In other words, the diameter of the pores becomes larger as the number of penetrating discharge sparks increases. Applicant points out that Takagi does not apply heat in a directed and locally restricted manner using a laser or other focused light source or gas flame or by applying an AC voltage to the region, as recited in amended independent claim 1.

Furthermore, Applicant notes that the Examiner appears to equate the "high-voltage probe" 7 of Takagi with the electronic feedback mechanism of the present invention. However, Applicant respectfully asserts that the Examiner overlooks that fact that the electronic feedback mechanism of the present invention, and the wording of independent claim 1, comprises an analysis circuit "which is a **current** analysis circuit or a voltage and **current** analysis circuit" (emphasis added). In other words, the feedback mechanism according to the present invention requires that a **current** analysis takes place. The high-voltage probe 7 of Takagi does not perform any **current** analysis whatsoever.

Hence, Applicant respectfully asserts that neither Cross nor Takagi, alone or in combination, teaches or suggests the application of heat in a directed and locally restricted manner using a laser or other focused light source or gas flame, or by applying an AC voltage

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to said region, as recited in amended independent claim 1, and Takagi does not teach or suggest a feedback mechanism involving a **current** analysis circuit (emphasis added).

Accordingly, Applicant respectfully asserts that neither Cross nor Takagi, alone or in combination, teaches or suggests all elements of amended independent claim 1 such that amended independent claim 1 is not obvious.

In view of the foregoing, Applicant respectfully asserts that amended independent claim 1 is allowable. Claims 2-15, 17-19, 21-25, 27-51 and 75-77 depend, directly or indirectly, from amended independent claim 1 and therefore include all the limitations of that claim. Therefore, Applicant respectfully asserts that claims 2-15, 17-19, 21-25, 27-51 and 75-77 are likewise allowable. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection to amended independent claim 1 and to claims 2-15, 17-19, 21-25, 27-51 and 75-77 dependent thereon.

In the final Office Action, the Examiner rejected claims 3-4, 21-25, 27-30, 36-40, 51 and 77 under 35 U.S.C. § 103(a), as being unpatentable over Cross as modified by Takagi et al. in view of Davies et al. (U.S. Patent No. 3,760,153).

According to the Examiner, Cross as modified by Takagi discloses the claimed invention except for, *inter alia*, the current increases and duration. According to the Examiner, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to increase the current by a certain order of magnitude and for a certain duration since Davies teaches increasing a current to a certain value for ending a step and maintaining the pulse for 50 milliseconds.

Applicant asserts that none of Cross, Takagi or Davies, alone or in combination, teaches or suggests all elements of amended independent claim 1 such that amended independent claim 1 is allowable. Cross and Takagi have been discussed above, and that discussion is relevant here. Davies does not cure the deficiencies of Cross and Takagi with respect to amended independent claim 1 as discussed above. Claims 3-4, 21-25, 27-30, 36-40, 51 depend, directly or indirectly, from amended independent claim 1 and, therefore, are

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likewise allowable. Accordingly, Applicant respectfully asserts that this rejection should be withdrawn.

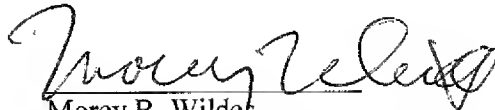
### Conclusion

In view of the foregoing amendments and remarks, Applicants assert that the pending claims are allowable.

Should the Examiner have any question or comment as to the form, content or entry of this Amendment, or if there are any further issues yet to be resolved to advance the prosecution of this application to issue, the Examiner is requested to telephone the undersigned counsel.

Please charge any fees associated with this paper to deposit account No. 50-3355.

Respectfully submitted,

  
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Dated: November 22, 2011

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